Notice of Allowability	Application No.	Applicant(s)	
	10/808,319	MISHIMA ET AL.	
	Examiner	Art Unit	
	Paulos M. Natnael	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *1-30*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 8/9/04; 8/24/04; 8/7/06.
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Paulos M. Natnael
Primary Examiner
Art Unit 2622

DETAILED ACTION

Allowable Subject Matter

1. Claims **1-30** are allowed.

2. The following is an examiner's statement of reasons for allowance: the prior art fails to discloses the following combination of limitations comprising:

A method of generating an interpolated image, comprising: inputting a video signal including a first reference image, a second reference image and a third reference image that continue in terms of time generating a first interpolation image put in a position of the second reference image, using the first reference image and the third reference image; computing a correlation value between the second reference image and the first interpolation image; generating a second interpolation image put in an interpolation position between the second reference image and the third reference image; and interposing the second interpolation image in the interpolation position when the correlation value is not less than a threshold, as in claim 1;

A method of generating an interpolation image comprising: inputting a video signal including a first reference image, a second reference image and a third reference image that continue in terms of time; generating a plurality of first interpolation images by different interpolation image generation manners, respectively, using the first reference image and the third reference image, the first interpolation images corresponding to a position of the second reference image; computing a correlation value between the second reference image and each of the first interpolation images;

selecting one of the interpolation image generation manners that the correlation value becomes maximum; generating a second interpolation image put in an interpolation position between the second reference image and the third reference image according to a selected one of the interpolation image generation manners; and interposing the second interpolation image in the interpolation position, as in claim 8;

A method of generating an interpolation image, comprising: inputting a video signal including a first reference image, a second reference image and a third reference image that continue in terms of time; generating a first interpolation image put in a position between the second reference image and the third reference image, using the second reference image and the third reference image; generating, using the first interpolation image and a second interpolation image already interposed between the first reference image and the second reference image, a third interpolation image put in a position of the second reference image; computing a correlation value between the second reference image and the third interpolation image; and interposing the first interpolation image in the interpolation position when the correlation value is not less than a threshold, as in claim 16;

A method of generating an interpolation image, comprising: inputting a video signal including a first reference image, a second reference image and a third reference image that continue in terms of time; generating a plurality of first interpolation images by different interpolation image generation manners, respectively, the first interpolation images put in an interpolation position between the second reference image and the third reference image; generating, using the first interpolation image and a second

interpolation image, a plurality of third interpolation images by the interpolation image generation manners, respectively, the second interpolation image already interposed between the first reference image and the second reference image, and the third interpolation images put in a position of the second reference image; computing a correlation value between the second reference image and each of the third interpolation images selecting one of the interpolation image generation manners that the correlation value becomes maximum; and interposing, in the interpolation position, one of the first interpolation images that is generated according to a selected one of the interpolation image generation manners, as in claim 18;

An interpolation image generating apparatus comprising: a video input unit configured to input a video signal including a first reference image, a second reference image and a third reference image that continue in terms of time; a first generator to generate a first interpolation image put in a position of the second reference image, using the first reference image and the third reference image; a computation unit configured to compute a correlation value between the second reference image and the first interpolation image; a second-generator to generate a second interpolation image put in an interpolation position between the second reference image and the third reference image; and an interpolation unit configured to interpolate the second interpolation image in the interpolation position when the correlation value is not less than a threshold to generate an interpolated video signal, as in claim 20;

An interpolation image generating apparatus comprising: a video input unit configured to input a video signal including a first reference image, a second reference

image and a third reference image that continue in terms of time; a first generator to generate a plurality of first interpolation images by different interpolation image generation manners, respectively, using the first reference image and the third reference image, the first interpolation images corresponding to a position of the second reference image; a computation unit configured to compute a correlation value between the second reference image and each of the first interpolation images; a selector to select one of the interpolation image generation manners that the correlation value becomes maximum; a second generator to generate a second interpolation image put in an interpolation position between the second reference image and the third reference image according to a selected one of the interpolation image generation manners; and an interpolation unit configured to interpolate the second interpolation image in the interpolation position, as in claim 21;

An interpolation image generating apparatus comprising: a video input unit configured to input a video signal including a first reference image, a second reference image and a third reference image that continue in terms of time; a first generator to generate a first interpolation image put in a position between the second reference image and the third reference image, using the second reference image and the third reference image; a second generator to generate, using the first interpolation image and a second interpolation image already interposed between the first reference image and the second reference image, a third interpolation image put in a position of the second reference image; a computation unit configured to compute a correlation value between the second reference image and the third interpolation image; and an interpolation unit

configured to interpolate the first interpolation image in the interpolation position when the correlation value is not less than a threshold, as in claim 22;

An interpolation image generating apparatus comprising: a video input unit configured to input a video signal including a first reference image, a second reference image and a third reference image that continue in terms of time; a first generator to generate a plurality of first interpolation images by different interpolation image generation manners, respectively, the first interpolation images put in an interpolation position between the second reference image and the third reference image; a second generator to generate, using the first interpolation image and a second interpolation image, a plurality of third interpolation images by the interpolation image generation manners, respectively, the second interpolation image already interposed between the first reference image and the second reference image, and the third interpolation images put in a position of the second reference image; a computation unit configured to compute a correlation value between the second reference image and each of the third interpolation images; a selector to select one of the interpolation image generation manners that the correlation-value becomes maximum; and an interpolation unit configured to interpolate, in the interpolation position, one of the first interpolation images that is generated according to a selected one of the interpolation image generation manners, as in claim 23; and,

A method of generating an interpolated image, comprising: inputting a video signal including a first reference image, a second reference image and a third reference image that continue in terms of time; generating a first interpolation image put in a

position of the second reference image, using the first reference image and the third reference image; computing a correlation value between the second reference image and the first interpolation image; generating a second interpolation image put in an interpolation position between the second reference image and the third reference image when the correlation value is not less than a threshold, as in claim 25.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (571) 272-7354. The examiner can normally be reached on 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paulos M. Natnael
Primary Examiner
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